Investigating the individual and organisational predictors of work-related driving crash involvement in Ethiopia

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ABSTRACT

The rate of road traffic injury and death in Ethiopia is at a critical level when compared to rates in high-income countries. Considering the enormity of this issue, research is to identify groups of high-risk road users and the factors contributing to their crash involvement. This study focuses on work-related drivers. This study explores driving behaviour as a mediator of the relationship between organisational and individual attribute factors and self-reported crashes in a sample of 213 work-related drivers in Addis Ababa, Ethiopia. The hypothesised framework identifies driving behaviour as the most proximal determinant of self-reported crashes, and safety values, role overload and self-efficacy as antecedents of driving behaviour. With the exception of the relationship between self-efficacy and driving behaviour, all the hypothesised relationships were supported. We make recommendations for intervention approaches that are theoretically focused and sensitive to the cultural context.

Keywords: Ethiopia, road traffic safety, work-related driving, work-related crashes

1. INTRODUCTION

Road traffic injuries are estimated to be the eighth leading cause of death globally. In 2010, 1.24 million people were killed on the world's roads (World He./;alth Organisation, 2013). The data indicates large disparity in rates between countries, with low-income countries having fatality rates nearly three times higher than high income countries (18.6 per 100 000 population compared to 6.3 per 100 000 population). The African region has the highest road traffic fatality rate, where the risk of dying as a result of a road traffic injury is 24.1 per 100 000 population compared to 10.3 per 100 000 population in the European Region (World Health Organisation, 2013).

Ethiopia is one among many low-income countries in Africa and, like other low-income countries it has a high rate of road traffic injury and death (Persson, 2008). In fact, The Coordination Office of Ethiopian National Road Safety identified a road traffic fatality rate of 114 deaths per 10 000 vehicles per year. In Addis Ababa, the capital of Ethiopia, road traffic injury and death is at a critical level. A report from The Addis Ababa Transport Authority Branch Office of the Federal Transport Authority (2010) indicated that from 2009-2010, 651 residents of the city lost their lives as a result of a road traffic crash. In this same period, 624 serious accidents (required hospitalisation), 669 minor accidents (no hospitalisation required) and 4,674 property damage only crashes were recorded. These crashes resulted in a total of $3,359,068 (USD).

The first stage in addressing the enormity of road traffic injury and death in Ethiopia is to identify groups of high-risk road users and the factors contributing to their crash involvement. Anecdotal evidence suggests that the majority of road users in Ethiopia drive their vehicle for work-related purposes. There is also a suggestion that approximately 81% of road traffic crashes in Ethiopia are attributed to driver error (Road Traffic Authority, 2005).

These findings suggest that research is needed to understand the determinants of work-related crash involvement, so to inform targeted intervention approaches.

Although research on work-related driving safety is scarce in Ethiopia, lessons can be learnt from high-income countries. In Australia, studies have identified organisational factors such as a driver's perception of the value given to safety in the organisation (Newnam, Griffin, & Mason, 2008; Wills, Watson, & Biggs, 2009), driver's experience of excessive work demands (Newnam, Greenslade, Newton, & Watson, 2011; Wills, et al., 2009), and individual factors including a drivers' belief in the ability to drive safely (i.e., self-efficacy; (Newnam, Griffin, & Mason, 2008; Wills, Watson, & Biggs, 2006), and their own driving practices (Newnam, et al., 2011) as predictors of work-related driving safety outcomes. The aim of this study is to explore these factors as direct and indirect predictors of self-reported crashes in a population of work-related drivers in Addis Ababa, Ethiopia.

1.1 Work-related driving behaviour

Safe driving practice has been well established as a significant predictor of safety outcomes in the general driving population (e.g., Lawton, Parker, Manstead, & Stradling, 1997; Parker, Reason, Manstead, & Stradling, 1995; Reason, Manstead, Stradling, Baxter, & Campbell, 1990). The significant relationship between driving behaviour and crash involvement has also been identified in the work-related driving population (Newnam, Newton, & McGregor-Lowndes, 2009). Given that the large majority of traffic accidents in Ethiopia are attributed to driver error (Road Traffic Authority, 2005), it is expected that the degree to which drivers engage in safe driving practices will be directly associated with their past crash involvement. As such, we predict:

H1: Drivers who report engaging in more frequent unsafe driving behaviour will more likely report a crash in the past four years.

1.2 Safety values

Safety values have been defined as the priority and importance associated with safety (Griffin & Neal, 2000). Much of the research concerning safety-related perceptions has focused on the workplace, particularly perceptions of the safety climate (e.g., Hofmann, Jacobs, & Landy, 1995; Neal & Griffin, 2006; Zohar, 2000). Past research has found support for the relationship between the value given to safety within an organisation and outcome measures such as, accident rates (Zohar, 1980), self-reported accident involvement (e.g., Mearns, 1998; Flin, Gordon, & Fleming, 1998), self-reported safety behaviours (e.g., Griffin & Neal, 2000; Hofmann & Stetzer, 1996), and frequency of compensation claims (O'Toole, 2002).

Measuring the construct of organisational safety values is somewhat problematic in relation to work-related drivers in Ethiopia. In this African Region, not all work-related driving behaviour is managed under the same organisational system of rewards and control that operate in most high-income countries (e.g., UK, Australia). Rather, enforcement of driving behaviour is regulated by the city government of Addis Ababa. Thus, many drivers self-manage their own behaviour rather than being managed by a supervisor within an organisational context. As such, measuring the value given to safety should be targeted at the appropriate source (i.e., own safety values or perception of the value given to safety by workgroup supervisors). In this paper, safety values represents an indirect predictor of self-reported crashes, through its effect on driving behaviour. As such, we predicted the following:

H2: Safety values will be negatively associated with unsafe driving behaviour.

1.3 Role overload

Role overload has been defined as the perception of excessive work demands (e.g., (Kahn, Wolfe, Quinn, & Snoek, 1964). Role overload has been shown to be significantly associated with unsafe workplace behaviours (Hofmann & Stetzer, 1996). Employees' perception of the degree to which job performance is affected by inadequate time, training, and resources has been found to influence safety performance (e.g., Hofmann & Stetzer, 1996; Hofmann, et al., 1995). In the work-related driving context, role overload has been identified as a predictor of safety performance. For example, Adams-Guppy & Guppy (1995) found that time pressure was influential in a compromise between speed and safety. Other research has also identified the deleterious effects of role overload on attention while driving (Downs, Keigan, Maycock, & Grayson, 1999; Salminen & Lahdeniemi, 2002). This research suggests that the priority given to production pressures influences safe driver practices in the work-related driving context. In this paper, role overload represents an indirect predictor of self-reported crashes, through its effect on driving behaviour. Thus, we predict the following:

H3: Excessive work demands will be positively associated with unsafe driving behaviour.

1.4 Self-efficacy

Self-efficacy is defined as the belief in one's ability to perform a specific task through successfully executing the behaviour to produce the desired outcome (Bandura, 1977). In this study, we define driver self-efficacy as the driver's belief in his or her own ability to drive a vehicle safely. Past research has found support for the role of self-efficacy in predicting organisational effectiveness (i.e., Bandura, 2000), driving behaviour (e.g., Tay, 2004; Tay & Watson, 2002), and work-related driving crashes (Newnam, et al., 2008). These studies have

established that belief in the ability to perform a task successfully predicts performance outcomes on a specific task. Thus, in this paper, self-efficacy represents an indirect predictor of self-reported crashes, through its effect on driving behaviour. Thus, we predict the following.

H4: Drivers' belief in their ability to drive safely in a work vehicle will be positively associated with safe driving behaviour.

In summary, we predict that driving behaviour will mediate the relationship between the organisational (safety values, role overload) and individual attribute (self-efficacy) factors and self-reported crashes:

H5: Driving behaviour will mediate the relationship between self-reported crashes and safety values, role overload and self-efficacy.

1.5 Control variables

Based on the results of previous research in Western industrialised countries, this study includes a number of control variables. The control variables include hours driven per week and educational level. Work-related drivers, on average, accumulate higher mileage and hours driving a vehicle in comparison to the average private motorist (Griffiths, 1997) and it has been suggested that the high exposure contributes to crash involvement (Downs et al., 1999). Furthermore, research has found that educational level to be associated with safe driving practices (i.e., Demirer, Durat, & Haşimoğlu, 2012).

2. METHODS

2.1 Participants and procedure

A total of 213 drivers participated in a survey. The large majority of the sample was classified as work-related drivers (98% mini-bus taxi-drivers) as defined by driving at least once per week for work-related purposes, including commuting to and from work (Murray et al., 2003). All drivers were male and aged between 19 and 60 years (SD = 6.9), with an average age of 32 years. The average level of education was grade 9 (SD=1.85; range = grade 1 to 12) and driving experience since obtaining a probationary licence was 6.2 years (SD=4.5; range=.11 to 31 years). Participants drove an average of 8.5 hours per day (SD = 2.69; range = 0.5–14 hours/day). Drivers also reported an average of 3.89 crashes over the past four years.

2.2 Procedure

Drivers were selected from the Addis Ababa Transport Authority Branch Office of the Federal Transport Authority. All taxi drivers in Addis Ababa are registered with the transport authority and are assigned to operate within designated routes of five zones, namely West Zone (Ayertena), Central zone (Makelawi), Eastern Zone (Megenagna), Southern Zone (south zone) and Northern zone (Asko). In fact, minibus taxis operate 106 routes in Addis Ababa (IBIS Transport Consultants Ltd, 2005). Moreover, they rotate and are randomly assigned on other routes every three months.

A list of licence plate numbers from vehicles who were assigned to drive exclusively on two specific routes [i.e., Megenagna-British embassy-Arat Kilo-Pisa-Interstate bus terminal (Merkato) and Interstate bus terminal-Mesalemia-Asrasment ring road roundabout-Lucanda] was obtained from the Transport Authority. These driving routes are characterized by their high traffic volume and, thus, were ideal zones to select a broad range of participants for this study.

A total population of 880 licence plate numbers were assigned these driving routes and 220 licence plates were randomly selected (via lottery method) by the researchers to

participate in completing a self-report questionnaire. Drivers of the selected vehicles were approached by researchers at Mekelle University at zone coordinating offices when they were not driving. After obtaining consent from each driver, a self-report questionnaire was distributed. From a total of 220 questionnaires distributed, 216 surveys were returned (98% response rate). This study was conducted with approval from the Monash University Human Ethics Committee.

2.3 Measures

The self-report questionnaire was prepared first in English and then translated into the official language of Ethiopia (i.e. Amharic). The translation was performed by University lecturers fluent in English and Amharic Languages.

Self-reported crashes: One item assessed crash involvement during the past 4 years. A road traffic crash was defined on the questionnaire as an incident of at least one road vehicle involving death, injury to a person, or property damage. Participants were asked to count the number of crashes they had been involved in when driving for work purposes.

Driving Behaviour: The ODBQ (Newnam et al., 2011) was utilised to measure work-related driving behaviour. The ODBQ consists of a twelve item scale that contains four subdimensions: speeding, inattention, rule violation and driving while tired. Items were measured on a 5-point Likert scale, ranging from rarely or never (1) to very often (5). The composite score for each of the subdimensions was used in the final analysis.

Safety values: Safety values were measured using three items from the managerial values dimensions of Griffin and Neal's (2000) Safety Climate Scale. Items included were ''I/My supervisor places a strong emphasis on motor vehicle safety'', ''Motor vehicle safety is given a high priority by me/my supervisor'' and ''I/My supervisor considers motor vehicle

safety to be important''. All items were measured on a 5-point Likert scale of strongly disagree (1) to strongly agree (5).

Self-efficacy: Self-efficacy was assessed by three items adapted from Renn & Fedor (2001). An example item is "Feel confident about your ability to drive safely in a work vehicle." Due to the complexity of the driving task, it was considered appropriate to measure only the strength aspect of drivers' belief in their ability to drive safely in a work vehicle (i.e., Gist & Mitchell, 1992). These items were measured on a 5-point Likert scale, ranging from never (1) to very often (5).

Role overload: Role overload was assessed using six items. Four items were adapted from Caplan Cobb, French, Harrison, & Pinneau (1980) scale and were reworded to suit the regional and driving context. Items included were ''How often does your job require you to work very fast?'' ''How often do your work duties require you to work very hard?'', ''How often do you not have enough help and resources to get the job done", "The amount of work you do interferes with getting the job done". Two additional items were developed specifically for this study. These items included "How often do you try to satisfy too many different people?" and "How often do you not have enough time to get the job done well". All of these items were measured on a 5-point Likert scale from rarely or never (1) to very often (5). In the analyses, the 6 items comprising the scale were randomly allocated into two item-parcels to systematically randomize the error variance and reduce the number of indicators for the latent construct (West, Finch, Curran, & Patrick, 1995).

Control measures: Drivers were asked to indicate how many hours they drove per day for work-related purposes and their highest level of education. Spaces were provided for participants to report their hours and education level.

3. RESULTS

3.1 Descriptive statistics

Confirmatory factor analysis (CFA) was used to test whether the items used to measure safety values, workload and attitudes were assessing distinct constructs. Traditionally, the χ^2 has been used to test the closeness of fit. However, due to its requirement of a large sample, and central χ^2 distribution, it is more commonly used as a measure of fit between the sample covariance and fitted covariance, rather than as a test statistic (Byrne, 1998; MacCallum, Browne, & Sugawara, 1996). As such, other goodness of fit statistics should be used in combination with the chi square statistic to assess model fit. Each of the fit indices has their own strengths and weaknesses and therefore, a combination of measures should be used to gain an overall sense of the fit of the data to the hypothesised model (see Byrne, 1998). The goodness of fit statistics used to evaluate the CFA and the subsequent Structural Equation Models (SEM) include the root mean square error of approximation (RMSEA) (Steiger, 1990,) comparative fit index (CFI) (Bentler, 1992), non-normed fit index (NNFI) (Medsker, Williams, & Holahan, 1994), and the goodness-of-fit index (GFI) (Kelloway, 1998) [1].

Twelve observed variables were investigated as indicators of the four latent constructs: driving behaviour, safety values, role overload and self-efficacy. Self-reported crashes, hours driven and educational level were entered as single item indicators. The six factor model CFA was estimated in LISREL VIII using maximum likelihood estimation (Joreskog & Sorbom, 1993). The CFA, with the 15 item indicators loaded significantly on their respective constructs (see Table 1) and, had good fit to the data [χ^2 (75) = 160.91, p=.00, RMSEA=.07, CFI=.95, NNFI=.93, GFI=.90]. Although the χ^2 statistic was significant, the other fit indices were all acceptable. Modification indices specified no significant improvements to the model by the addition of any error variances, or cross loadings.

[1] RMSEA values less than .05 indicate good fit, and values between .05 and .08 indicate reasonable fit. CFI, NNFI and GFI ranges from 0 to 1 with values exceeding .90 indicating a good fit to the data.

[Insert Table 1 here]

3.2 Structural equation modelling

Having supported the proposed factor structure of the data, we were able to look at the correlations among the study variables. These are reported in Table 2. The bivariate correlations among the study variables provided initial support for all of the study hypotheses. The full model was next tested through structural equation modelling[2].

[Insert Table 2 here]

Structural equation modelling allowed us to examine the independent effects of the predictor variables, and test whether the data supported the hypothesized distinction between the antecedents and determinant of self-reported crashes. The method used to assess the mediating variable effect was based on the product of the regression coefficients involving paths in a path model (Sobel, 1982). This method finds an estimate of the variance of the mediating variable effect for the standardised variables, based on the product of the correlation between the independent variable and the mediating variable and the partial regression coefficient relating the mediating variable to the dependent variable, controlling for the independent variable (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002). In comparison to other methods assessing the mediating variable effects, such as Baron &

[2] Drivers own safety values and the perceptions of the value given to safety by their supervisor were combined in the final analysis. Drivers' own safety values and their perceptions of their supervisors safety values correlated similarly with driving behaviour ($r=-.50, -.51$, $p>.05$, respectively). Furthermore, F-tests revealed no significant difference between the drivers' who responded on either scale and their age, educational level, number of crashes in a work vehicle, efficacy beliefs, workload and driving behaviour.

Kenny's (1986) approach for testing mediation, this method has been found to have the most accurate Type I error rates and the greatest statistical power (MacKinnon, et al., 2002)

3. 3 Model comparison

The hypothesised model, in which behaviour mediated the link between the antecedents of self-reported crashes (safety values, role overload, efficacy) was compared with a saturated structural model in which the antecedents of safe driving outcomes directly predicted driving behaviour and crashes in a work vehicle. Hours driven per hour and educational level were controlled for in both the hypothesised and saturated models.

Analyses showed that both the mediated model and the saturated model provided good fit to the data (see Table 3). The saturated model [$\Delta\chi^2_{(72)}$ =169.64, p<.01] did not offer a significantly better fit than the mediated model [$\Delta\chi^2_{(75)}$ =175.47, p<.01]. Furthermore, the saturated model revealed no significant direct relationships between the antecedents of safe driving outcomes and self-reported crashes. Thus, the mediated model was retained in the final analyses (see figure 1).

[Insert figure 1 here]

The final model supported Hypothesis 1, in that self-reported crashes in a work vehicle was predicted by driving behaviour (*B*=.17, *p*<.05). Hypothesis 2 and 3 were supported as the value given to safety (*B*=.-47, *p*<.01) and drivers' perceptions of excessive role demands was related to safe driving behaviour (*B*=.46, *p*<.01). Hypothesis 4 predicted that efficacy would be related to their driving behaviour, but this path in the model was not significant (*B*=.08, *p*=ns). Thus, Hypothesis 5 was partially supported as driving behaviour

mediated the relationship between self-reported crashes and the organisational factors (safety values, role overload), but not self-efficacy.

4. DISCUSSION

This study was the first to examine the predictors of work-related driving crash involvement in the Ethiopian context. Based on the knowledge learnt from research in Western industrial countries, this study explored driving behaviour as a moderator of the relationship between organisational and individual factors and self-reported crashes. The results of this study offer valuable insight into the development of intervention approaches designed to improve the safety of work-related drivers in Ethiopia.

With the exception of the relationship between self-efficacy and driving behaviour, all the hypothesised relationships were supported. Specifically, we identified a positive, yet weak, relationship between driving behaviour and self-reported crashes. This relationship suggests that drivers who reported more frequent unsafe driving practices were likely to report a higher number of crashes in the past four years. This finding is consistent with research conducted in the general driving (Lawton, et al., 1997; Parker, et al., 1995; Reason, et al., 1990) and work-related driving (Newnam et al., 2009) contexts.

It is also important to note that although the association between behaviour and self-report crashes was significant, it was a weak relationship. This finding suggests that other factors could account for a greater amount of the variance in self-reported crashes. Past research in low-income countries has suggested that factors such as predestination (Dixey, 1999), superstitious beliefs (Peltzer & Renner, 2003), infrastructure and other people (Kouabenan, 1998) are associated with crash involvement. This research suggests there is a need for a greater understanding of the culturally relevant predictors of crashes in Ethiopia.

The relationships between role overload, safety values and driving behaviour were supported. These findings suggest that drivers who value safety or perceive their supervisors as valuing safety and experience less work demands are more likely to report safer driving behaviour. Much research has supported the relationship between the value given to safety and organisational performance (Griffin & Neal, 2000; Zohar, 2000). These results are also consistent with past research examining safety values as an indirect predictor of self-reported work-related crashes (Newnam et al., 2008) and a direct predictor of driving behaviour (Wills et al., 2009; Wills et al., 2006). Furthermore, the relationship between excessive role demands and organisational safety performance (Hofmann & Stetzer, 1996; Hofmann, et al., 1995) and driving behaviour (Adams-Guppy & Guppy, 1995; Newnam et al., 2011) has been well established.

It was surprising that the relationship between self-efficacy and driving behaviour was non-significant. Past research has identified self-efficacy as a predictor of a drivers' motivation to drive safely in a work vehicle (Newnam et al., 2008). This finding would suggest that motivation to drive safely is well aligned with driving practices; however, support was not found for this assumption. Furthermore, no indirect relationship between self-efficacy and self-reported crashes was identified, which is inconsistent with past research in the work-related driving context (Newnam et al., 2008). As discussed previously, a possible suggestion for this non-significant relationship may be attributed to cultural issues. Research conducted in parts of Africa [ie., Nigeria (Dixey, 1999), South Africa (Peltzer & Renner, 2003), Ivory Coast (Kouabenan, 1998), Ghana (Yankson et al., 2010)] suggests that professional drivers perceive road traffic crashes as random events due to bad luck and not under the control of the driver. In support of this explanation, the mean self-efficacy score identified in this study (M=2.81) was significantly lower to efficacy scores identified in research conducted with work-related drivers in Australia (M=4.46; (Newnam et al., 2008).

This finding suggests that intervention needs to focus on empowering drivers in their perception of their ability to drive safely.

4.1 Practical applications

This study is the first to systematically examine the predictors of work-related driving crashes in the Ethiopian context. With the exception of self-efficacy, the results of this study are consistent with existing theoretical models used to guide intervention development. However, effective intervention must not only consider it's alignment with theory (i.e, (Newnam & Watson, 2011), but it must be relevant and context specific (Lewis & Newnam, 2011). In support, Dixey (1999) states that preventative strategies developed in Western industrialised countries have a particular ideological bias (i.e., individualist and rationalist culture) and, thus, are unlikely to be effective when implemented within a different context. Thus, in this study we make recommendations that are theoretically driven and culturally sensitive.

In the Ethiopian context, road traffic education programs should be focused on educating drivers that accidents are avoidable with appropriate action. The results of this study support such as approach. One intervention approach could focus on empowering drivers to take direct control of their own driving behaviour. Overcoming the cultural ideologies associated with road traffic crashes being control by external forces could be achieved through worker participation programs (Gregersen, Brehmer, & Moren, 1996; Newnam & Watson, 2009) designed to discuss the causes of crashes and strategies to avoid crash involvement. This intervention approach could be combined with driver training (Christie, 2001) to improve skill and manoeuvring techniques. As evidenced by the results of this study, this type of program could significantly improve safe driving behaviour and subsequently reduce crash involvement.

A second type of program could focus on promoting the intrinsic value associated with safety. Similar to Western industrialised countries, enforcement efforts in Ethiopia are focused on promoting safe driving practices through a system of negative reinforcement (i.e., drivers receive penalties for rule violation, loss of employment). However, unlike Western industrialised countries, there is no attention given to systems designed to positively reward safe driving practices within the traditional organisational context (e.g., feedback, goal setting). As such, intervention could target organisations, with the aim of creating a climate in which safety is valued and prioritised by drivers (Newnam, Lewis, & Watson, 2012; Zohar & Luria, 2004)

The first step in the development of this type of intervention would involve integrating work-related driving safety responsibilities within the roles and responsibilities of individuals within general road safety enforcement agencies, insurance agencies and organisations employing work-related drivers. Once this has been achieved, training programs could focus on developing the skills of these leaders in the safety management of work-related drivers. Such a training program could focus on developing safety leaders' ability to identify situations in which drivers may be at risk on the road (e.g., drivers are tired, stressed, under pressure to meet deadlines) and manage these situations effectively. A similar approach has been found to be successful in improving safe driving outcomes in the Australian context (Newnam et al., 2012).

The central role of safety leaders would be enhancing drivers' belief in the intrinsic value associated with safety through a system of positive reinforcement. Consistent with past research (Newnam et al., 2012; Zohar & Luria, 2004), this strategy would be likely to (1) improve drivers' own value given to safety or the perception of the value given to safety by their safety leader, (2) allow drivers (and safety leaders) to generate strategies to avoid situations of role overload in daily work routines, and (3) promote belief in a drivers' ability

to drive safely. Based on the results of this study, these recommendations have the potential of improving safe driving behaviour.

4.2 Limitations

Although this study has a number of strengths, three limitations of the research need to be addressed. First, in this study we relied on self-report data for the work-related driving crashes measure, which are open to socially desirable responding. However, this is less likely to be an issue as self-report driving questionnaires have been found to be associated with minimal social desirability bias (Lajunen & Summala, 2003). Furthermore, self-report measures of crashes have been found to be strongly correlated with independent observations (Lusk, Ronis, & Baer, 1995) and objective measures of crashes (e.g., Lajunen & Summala, 2003). Thus, we believe self-reported crashes to be a suitable measure.

A second limitation relates to the cross-sectional measurements (i.e., participants were tested at one point in time). The limitation is that reverse causation could also explain the relationship between the variables as it was not possible to test the casual relationships proposed in this research. For example, the positive relationship between driving behaviour and crashes that was observed in this study may be attributable to the scenario that drivers who have had a crash, and not experienced any adverse outcomes, then engaged in more frequent unsafe driving behaviour. Longitudinal research is needed to provide further validation for the casual relationships proposed in this study.

A third limitation was that the self-report questionnaire was prepared first in English and then translated into the official language of Ethiopia (i.e. Amharic). As a result, some technical terms in English may not have been translated accurately and potentially biased the results. However, the translation was performed by University lecturers fluent in English and Amharic Languages; thus, the potential of bias was minimal.

4.3 Conclusion

The aim of this study was to explore driving behaviour as a mediator of the relationship between organisational and individual attribute factors and self-reported crashes in a population of work-related drivers in Addis Ababa, Ethiopia. With the exception of the relationship between self-efficacy and driving behaviour, all the hypothesised relationships were supported. The results of this study offer practical suggestions that are both theoretically-driven and culturally sensitivity and have the potential to reduce the burden of road traffic injury and death in Ethiopia.

Conflicts of interest: none

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